

**D-Link DCS-942L**

**Network Camera Setup Manual**

**for the RavenShoeSecurity.com**

**Internet Recording Service**



# Notice

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# Introduction

The D-Link DCS-942L network camera is capable of sending motion activated pictures over the Internet to RavenShoeSecurity.com while also recording motion activated video clips (with sound) to a built-in DVR (Digital Video Recorder).

The DCS-942L has a more sophisticated motion detection system than the DCS-932L with a finer grained mask. The DCS-942L features a PIR (Passive InfraRed) sensor that detects the heat signature of people and animals. This PIR can be used as the sole source of motion detection or can be combined with the video motion detection system such that either mechanism triggers an event. The camera can also be configured to ignore the PIR and use the video motion detection as the sole even trigger.

The DCS-942L has a built in DVR that records to a micro SD slot on the side of the camera. At the time of this writing the maximum supported chip size is 8GB. In tests that we have performed the capacity of the micro SD is about 14 hours in hi-resolution mode (640x480 at 30fps). At low resolution (320x240 at 10fps) the capacity is approximately 3 days.

This document gives the step by step instructions needed to set up a DCS-942L network camera to send motion activated pictures to RavenShoeSecurity.com.

The skills required to follow these instructions would include:

- 1) Be able to use a web browser and have experience with the advanced user features and settings of Gmail, Hotmail, Yahoo, eBay, Facebook, LinkedIn, and so forth.
- 2) Be able to identify and physically access the Internet router or modem provided by your telephone or cable company. Be comfortable with connecting computer devices using RJ45 cables.
- 3) If you are using WiFi to connect your camera you will need to know the SSID (Service Set Identifier) and WEP/WPA/WPA2 key to activate the camera's WiFi functions.

## Preparation

In order to set up the camera to operate with RavenShoeSecurity.com you will need the following items:

DCS-942L Admin Login Credentials
Internet Connection
Optional WiFi SSID and WEP/WPA/WPA2 key
Access to the camera's Internal Website
RavenShoeSecurity.com ftp Account

## DCS-942L Admin Login Credentials

For a DCS-942L out of the box the admin userID is “**admin**” and the password is blank. If this has been changed and you do not have this information it will be necessary to hard reset the camera.

A hard reset is performed by pushing an unfolded paper clip into the small hole on the back of the camera marked RESET. When you push the paper clip in, you will feel a click when the reset button has been activated. Hold this pose for 3 seconds or more while the camera power is on. All settings in the camera (including the admin userID) will be reset to factory defaults.

## Internet Connection

If the camera is being hard wired then it will be necessary to install an RJ45 Ethernet jack that provides access to the Internet in the area where the camera is being deployed. The camera will also need power. Since the camera uses less than 5 watts of power, the lightest of extensions can be used – such as a 30m (~100ft) 16 gauge Christmas tree light power cord.

The DCS-942L comes with a 1m (~3ft) RJ45 Ethernet cable. A longer one (up to 30m or ~100ft) can be purchased at a computer supply store. Any RJ45 style Ethernet connection where a laptop computer can be plugged in and access the Internet can support a network camera.

If the camera has already been setup to use WiFi then you can skip any specific WiFi setup procedures listed here.

If the camera has not been setup to use WiFi and you intend to deploy it in the WiFi mode then there is fair odds that you will need to physically connect the DCS-942L to your router using an Ethernet cable during the setup process. Therefore as part of preparation involving a WiFi setup, you should ensure that you have physical access to the router and that there is power near by for the camera.

The **router** is usually a single box that your ISP (Internet Service Provider) installs to provide Internet service. These single boxes are actually a combo of modem and router all-in-one. Other times the ISP provides just a modem, and you add your own router to the mix, which may or may not provide a WiFi access point. For the purposes of this discussion the router and modem are assumed to be integrated into one appliance referred to as simply a router.

The router does require power and generally has a few flashing lights. The router can be identified by a connection from your physical cable TV wire or physical phone line into the router. This physical wire is the electronic path to and from the Internet. In a home environment the router is often installed near a TV, if it has been provided by a cable TV company. In an office environment there is often a Telephone Room where routers and other telecom equipment are installed.

Routers generally have 4 or more RJ45 Ethernet connectors to plug in devices (computers, Internet radios, etc). Some routers also provide wireless access using WiFi and may or may not have one to three antennae. Any devices connected to the router either physically with an RJ45 Ethernet cable or wirelessly through WiFi are said to be on the LAN (Local Area Network).

Devices on the LAN can initiate connections with other devices on the LAN or the Internet (known as the WAN [Wide Area Network]). However devices on the WAN are not permitted to initiate connections with devices on the LAN as the router will not allow it. In this capacity the router functions as a firewall.

## **WiFi SSID and WEP/WPA/WPA2 key**

There are 2 ways to setup the WiFi function of the camera. The easy way is to use WPS (Wireless Protected Setup). This, as described in the WiFi setup section, involves pressing the WPS button on the router and the camera at the same time which causes the router to tell the camera the SSID and key. It is a very easy and quick method to setup WiFi devices.

However not all WPS functionality is compatible and there are fair odds (in our humble experience) that it will not work. So Plan “B” is to use the camera’s admin functions to identify the WiFi networks that it can see and then to manually enter the key. So for Plan “B” you will need the SSID (aka: wireless network name) and key.

If you do not have this information at hand then best to call your ISP if they are ones that provided the router. If they provided just the modem then they will not be able to help with this problem. ISP tech staff generally can login to routers that they provide and get this information for you.

Alternatively if you know the IP address, admin userID, and admin password for your router’s admin functions, you can login yourself from any PC on the LAN. Since routers are different, it is impossible to give a specific description. But WiFi routers generally have a wireless settings page where you can see what the SSID and wireless key is. Accessing the admin functions of a router is recommended for advanced computer users only. It is very easy to put your LAN completely out of kilter by accidentally pushing the wrong buttons.

## **Access to Camera’s Internal Website**

During the setup you will need to connect a computer browser to the internal admin website of your camera. While each camera has a full blown computer inside, there is no keyboard, mouse, or screen. To provide a human interface for this computer the camera has an “internal website” with admin and setup functions as well as access to live video. To access the camera’s admin functions you may use MyDlink.com – which means you can reconfigure the camera from anywhere in the world and from pretty much any device (computer or smart phone). Alternatively you can access the admin functions of the camera from a

computer connected to the same LAN (Local Area Network) as the subject camera.

## **MyDLink.com**

Setting up MyDlink.com is out of scope for this document. Refer to the documentation for the DCS-942L for more information. Also, at the time of this writing, D-Link provides free technical support for users setting up MyDlink.com within the first 30 days after a camera purchase.

## **DLink Setup Software**

Without MyDlink.com functionality it will be necessary to download the D-Link setup software for Windows XP, Windows 7, and Mac using this link:

<http://www.dlink.ca/products/?pid=DCS-932L&tab=3>

Click on the *Additional Downloads* link. Scroll down to the *PC Setup Wizard SE* for **Windows XP or Windows 7** users or *Mac OSX Setup Utility* for **Mac** users. Download and install this software. Run it once to make sure it is working. It should report all the D-Link cameras that you have powered up and connected on your LAN. If you have none then this software should show that fact as well.

Note that the above software is downloaded from the support page for the DCS-932L rather than the DCS-942L. The D-Link setup utility for the DCS-932L is a small file that can be downloaded quickly. It detects all the D-Link cameras on your network and suits the purposes of this manual. The DCS-942L support page only provides a copy of the Install CD in downloadable form. This file is much bigger and more involved to install.

If the full CD Install better suits your purposes, then please feel free to use it as the DLink setup utility is included. You may download the full CD Install here:

<http://www.dlink.ca/products/?pid=DCS-942L&tab=3>

Click on the *Additional Downloads* link. Click on the *Download Now* button for the Install CD.

The main purpose of the DLink setup software, for our purposes, will be to find the LAN IP address of the camera when it powers up and connects to your



router. The setup software will then open a browser to the camera's internal website where you can access the admin and setup functions. You can also use this same IP address from any other device on the LAN (iPad, SmartPhone) as a URL to access the camera.

## **Network Places**

DLink setup software is definitely required for Mac. However if you are using Windows XP or Windows 7 and have the right router and the right updates and favourable planetary alignments then your camera(s) may show up in Network Places. Or they may not. The feature required of Windows and your Router for this to operate is uPNP (Universal Plugs aNd Play). But it is a frustrating thing to get working. It could make a person climb to the top of a flagpole and set their hair on fire! So our approach is either uPNP works or it's best to immediately switch to using the *D-Link Setup SE* software. It is worth noting that when uPNP is working that it seems quite reliable – so it's worth a shot.

# Camera Setup Procedure

## Step 1: Initial Power Up

To start the camera setup process, first connect the camera to the router using the supplied RJ45 Ethernet cable. Power the camera up and observe that the light on the back of the camera turns red. Wait a minute or so for the light on the back of the camera to turn green. If the light does not turn green then unplug the cable from the camera and connect it to a laptop and verify that the Internet works. If the Internet is working then contact D-Link for support as it would seem there is something wrong with your camera.

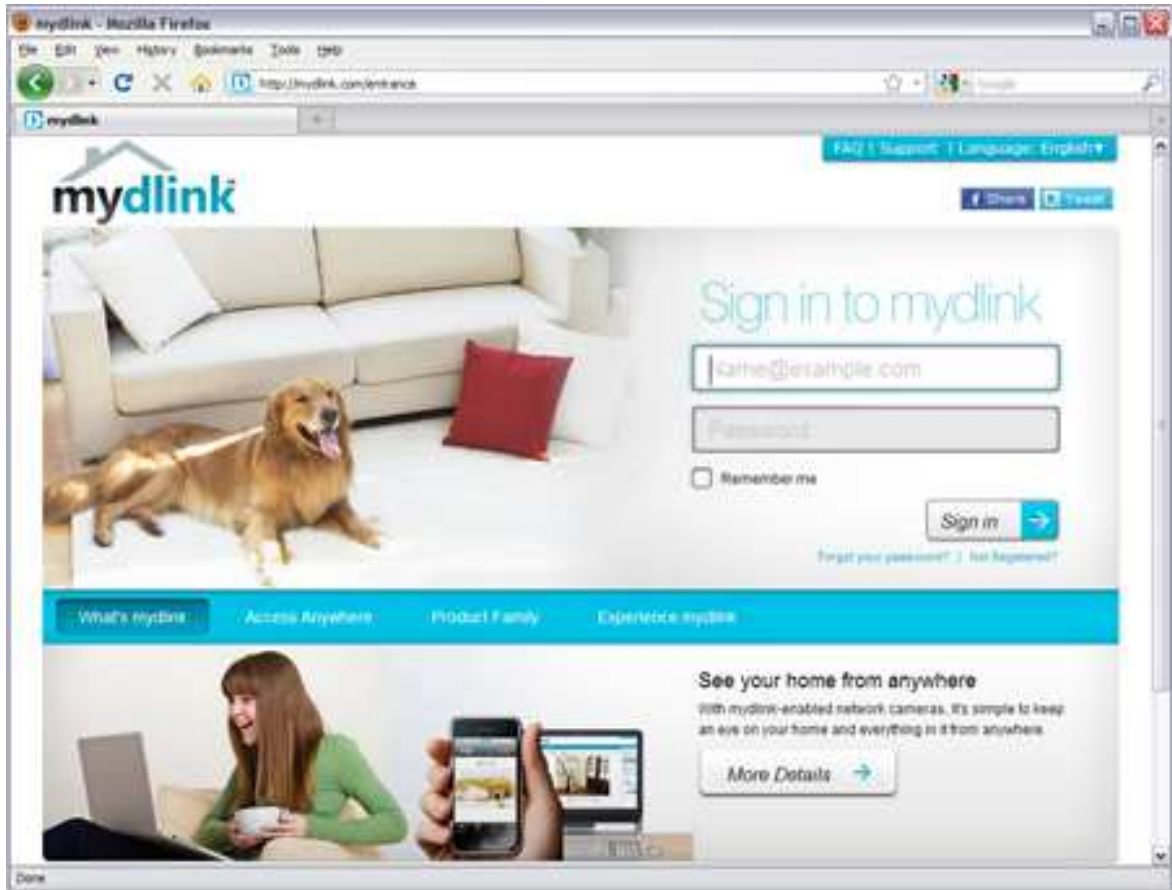
## Step 2: Access the Camera's Admin Functions

The next setup is to access the camera's internal website. You have 3 possible options for this:

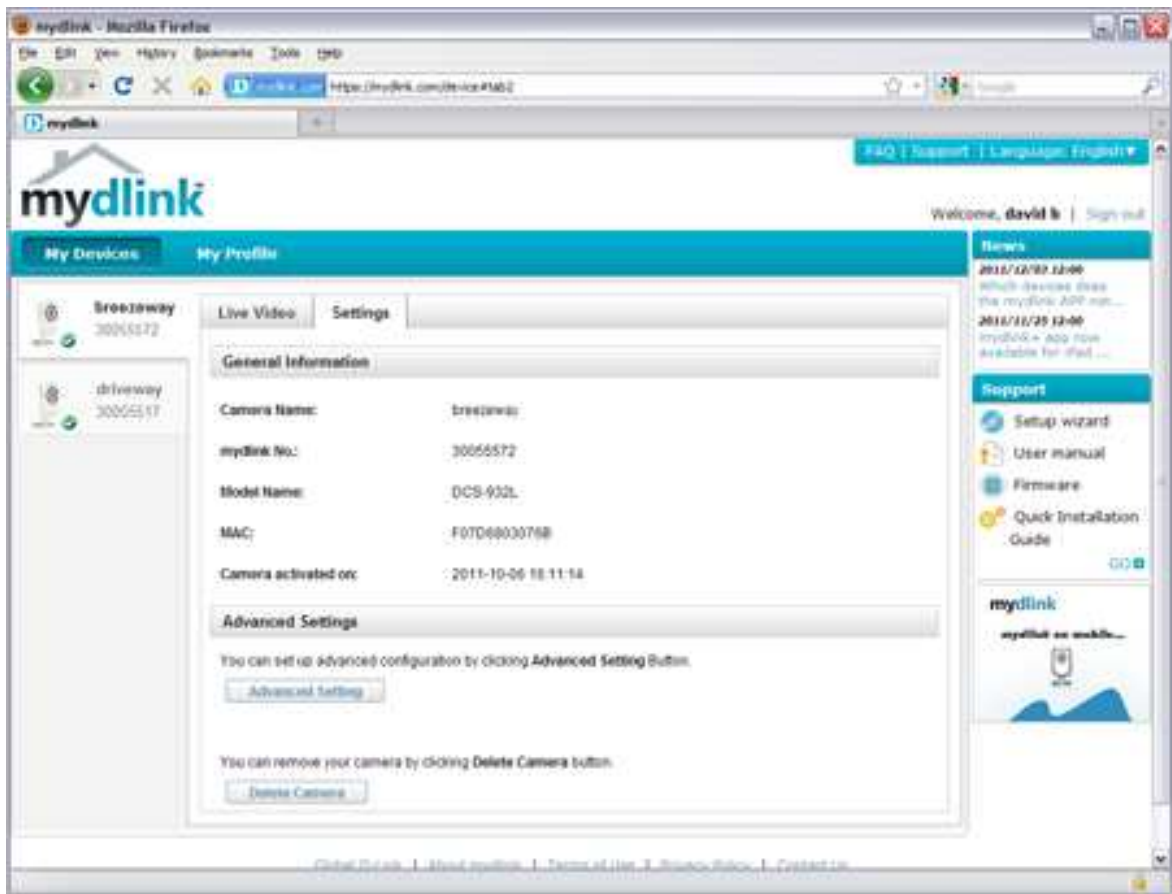
<i>Method</i>	<i>Platform</i>
MyDLink.com	All computers, laptops, operating systems, smart phones, Android, iPhone, Blackberry,...
DLink Setup software	Windows XP, Windows 7, and Mac
Network Places	Windows XP and Windows 7 but only works on randomly selected systems.

## MyDlink.com Admin Access

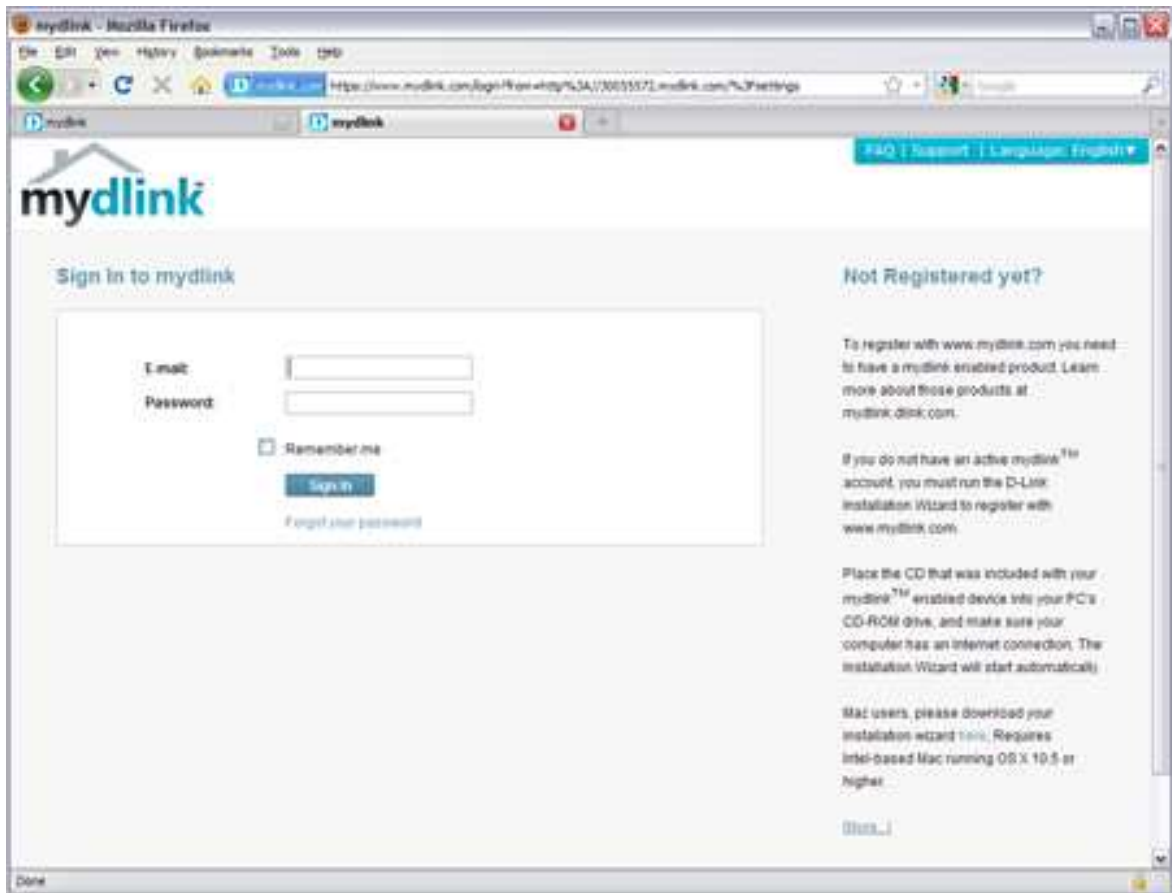
Login to your MyDLink.com account:



Click the *Settings* tab, then click the *Advanced Settings* button:

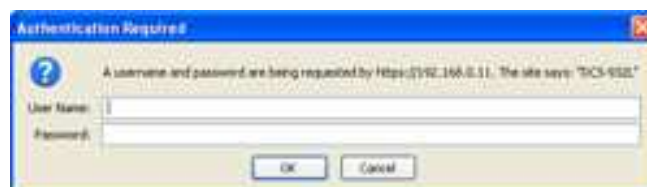


Login a second time (for security concerns) with your MyDLink.com account:



If it's the first time you have used MyDLink.com to access the admin functions of your cameras you will be asked to make a security certificate exception.

Next you will be prompted for the Login admin userID and password for **your camera**. This is not the same as your MyDLink.com credentials. For a new camera or one that has been hard reset the User Name is "admin" and the Password is blank.

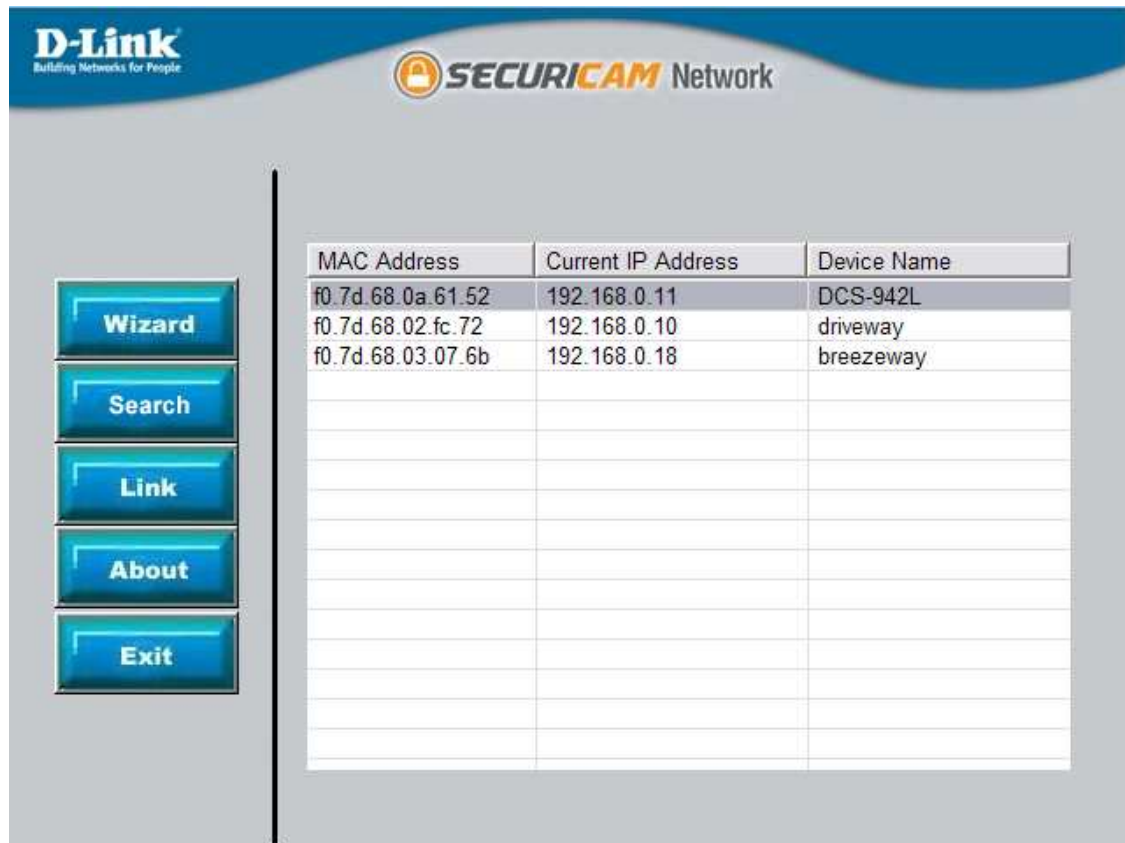


Skip ahead to Setup Step 3...

## DLink Setup Wizard Software Admin Access

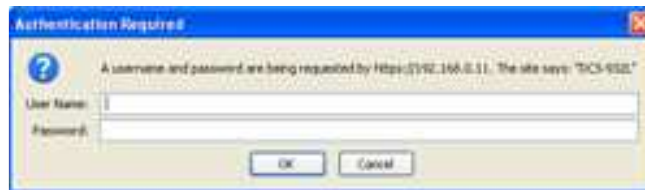
The DLink Setup Wizard software is the sure fire way to access your camera's admin functions from any computer that is on the same LAN as the camera. There are versions for both the PC and the Mac.

The Windows XP Version is shown below:



If you have powered down or powered up any DLink cameras since you started the wizard then click the *Search* button to get a fresh list. Click on the subject camera to highlight it (as shown) and then click the *Link* button to start a browser.

You will then be asked to login to the camera's admin website:



Click on the *Setup* tab to navigate to this screen:



Now skip ahead to Step 3...

## Network Places Admin Access

Open My Network Places (on XP) or Network Places (Windows 7) to see the following display. The four monitor looking icons are network cameras.



Double click the subject camera and you should then get asked for the camera's admin userID and password.



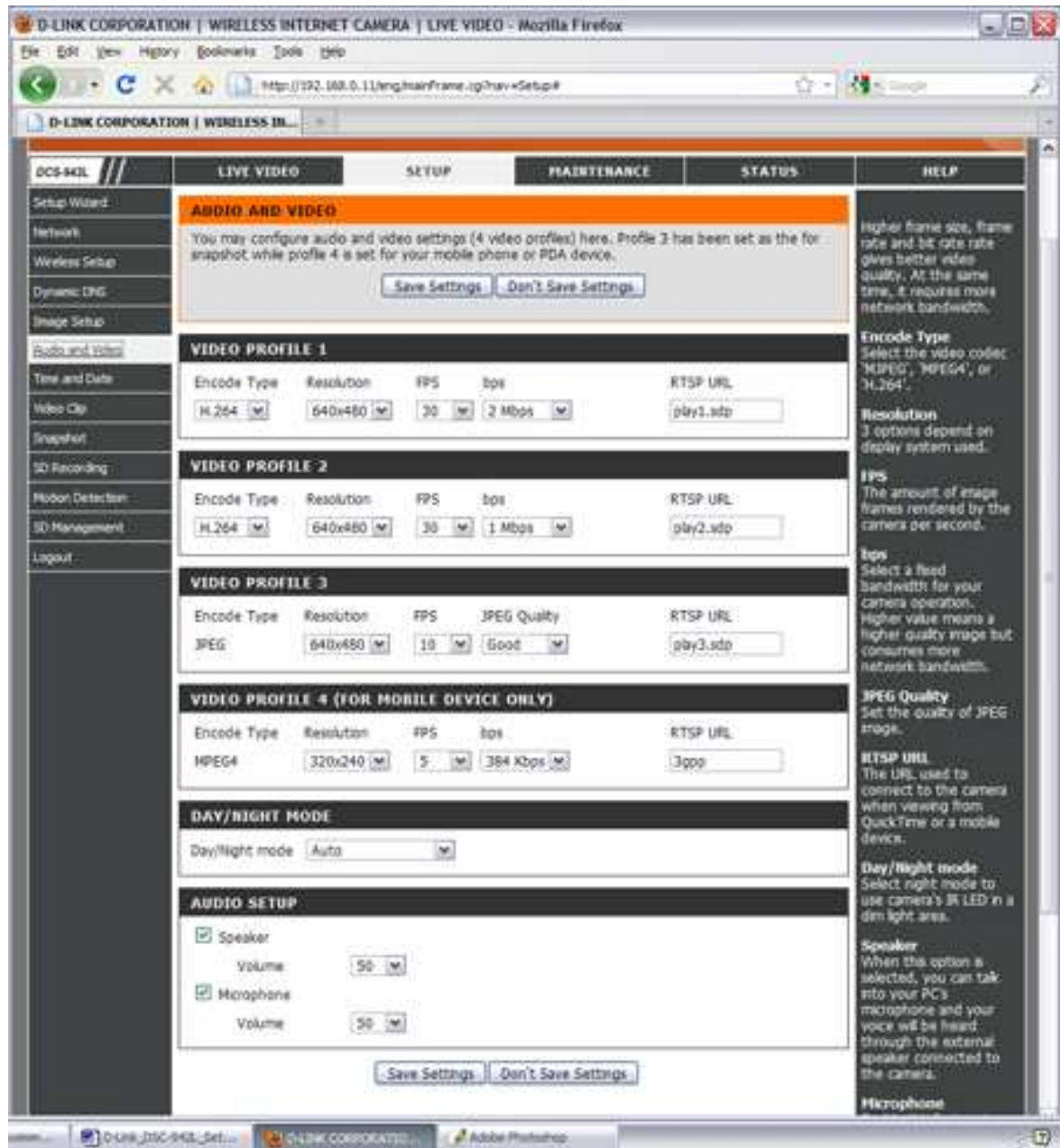


Click on the *Setup* tab and you should now be at the Camera Admin Website Setup Page:



## Step 3: Audio and Video

Click the *Audio and Video* menu and set the resolution for *Video Profile 3* to **640x480**, *FPS* to **10**, and *JPEG Quality* to **Good**. Click *Save Settings* to update.



## Step 4: Time and Date

Click on the *Time and Date* menu. Under *Time Configuration* select the appropriate *Time Zone*. Check or Uncheck *Daylight Savings Time*, depending on your location. Under *Automatic Time Configuration* Check the *Synchronize with NTP Server* box and use the dropdown box to *Select NTP server*. Click the *Save Settings* button.

D-LINK CORPORATION | WIRELESS INTERNET CAMERA | LIVE VIDEO - Mozilla Firefox

http://192.168.0.11/eng/mainFrame.cgi?nav=Setup#

D-LINK CORPORATION | WIRELESS IN...

Product: DCS-942L Firmware version: 1.01

**D-Link**

DCS-942L // LIVE VIDEO SETUP MAINTENANCE STATUS HELP

Setup Wizard  
Network  
Wireless Setup  
Dynamic DNS  
Image Setup  
Audio and Video  
**Time and Date**  
Video Clip  
Snapshot  
SD Recording  
Motion Detection  
SD Management  
Logout

**TIME AND DATE**

Here you may configure the internal clock of your camera.

Save Settings Don't Save Settings

**TIME CONFIGURATION**

Time Zone (GMT-05:00) Eastern Time (US & Canada)

☒ Enable Daylight Saving

☒ Auto Daylight Saving

☐ Set date and time manually

**AUTOMATIC TIME CONFIGURATION**

☒ Synchronize with NTP Server

NTP Server ntp.dlink.com.tw << Select NTP Server

**SET DATE AND TIME MANUALLY**

☐ Set date and time manually

Save Settings Don't Save Settings

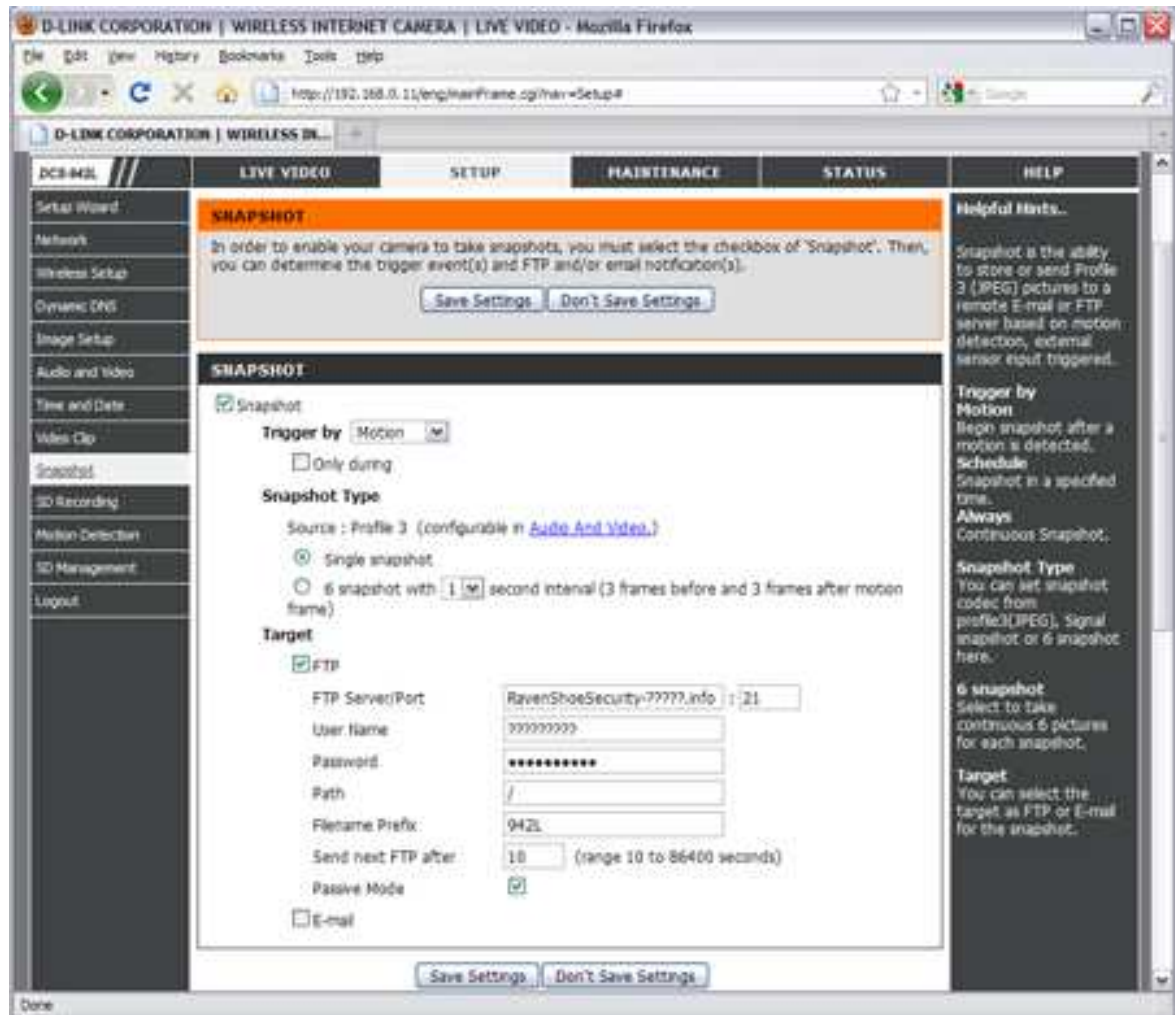
Helpful Hints..

Setting the correct time and time zone will allow you to have accurate logs and proper scheduling for recordings.

Done

## Step 5: Snapshot

Click on the *Snapshot* menu to see the following page:



Check the *Snapshot* checkbox.

You can choose either a *Single snapshot* or *6 snapshots* depending on your needs. If you are using the on-board micro SD to record video clips then you likely would prefer the *Single snapshot* option. That way whenever there is a motion event there will be: 1) a video clip stored on the SD as well as 2) a snapshot sent to RavenShoeSecurity.com. If you see an interesting image on RavenShoeSecurity.com you can use the timestamp for that image to easily find the related video clip (see below: Retrieving Video Clips).

On the other hand if you are not using the micro SD or want more information captured by RavenShoe.com than a single shot then select the *6 snapshot* option. Generally a **1** second interval is good.

Check the *FTP* box and enter **21** for the *Port*, **/** for the *Path*, and check the *Passive Mode* box. *Send next FTP after* should be set to **10**. The *Filename Prefix* will become the name that is shown on RavenShoeSecurity.com home page for this camera. If you have multiple cameras make sure they each have a unique name or else the RavenShoeSecurity.com service will intermix the pictures into a single stream.

Copy and paste the *FTP Server*, *User Name*, and *Password* from the Settings area of your RavenShoeSecurity.com home page as shown here. Easiest to open 2 browsers for this task.

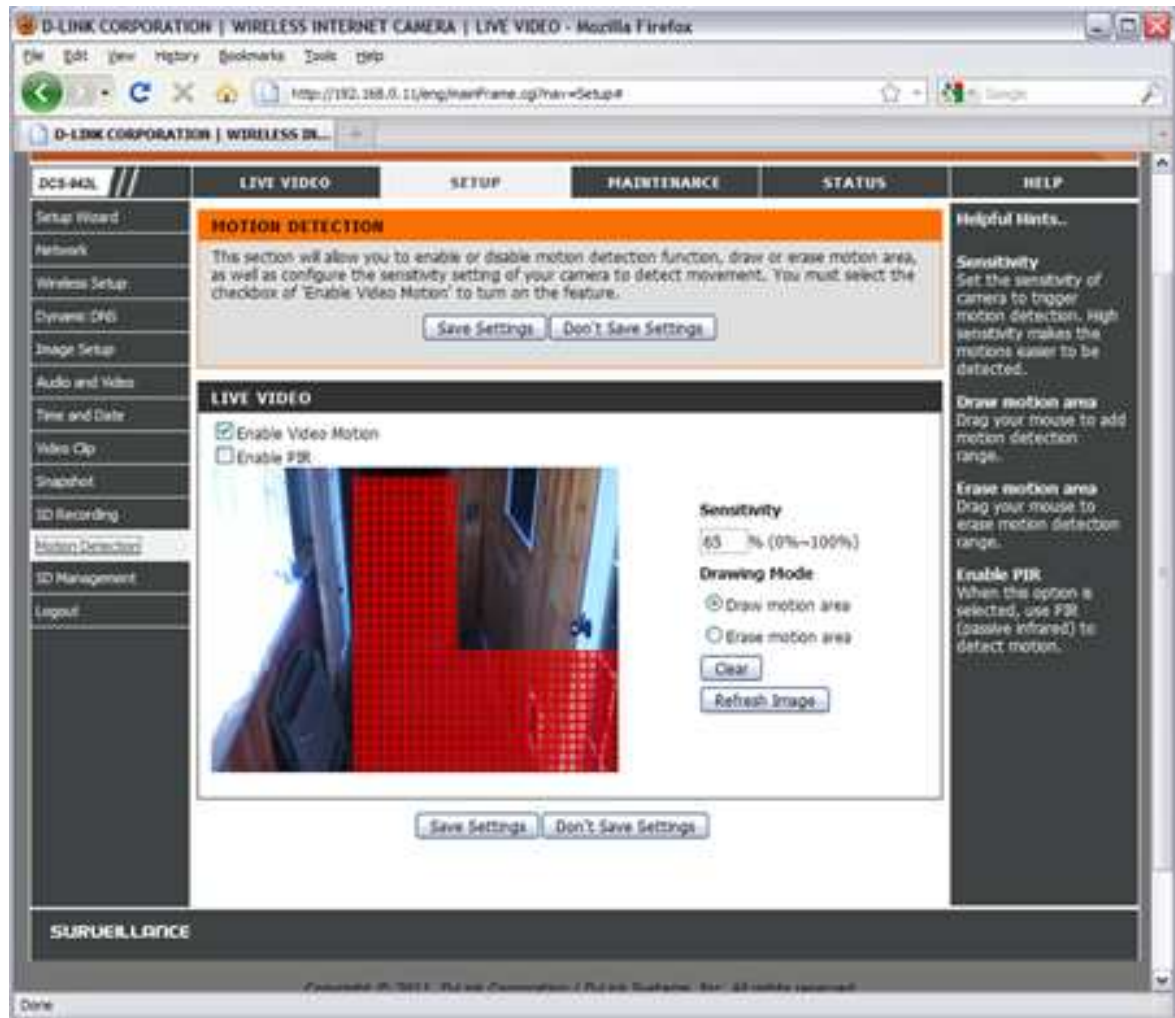


Click on *Save Settings*.



## Step 6: Motion Detection

Click on the Motion Detection menu to see the following page:



If you want to use the PIR (Passive InfraRed) then check the *Enable PIR* box. The PIR is the round opaque white object above the lens. It senses other objects that give off heat such as people and animals. The mask does not effect the PIR.

If you want to enable video motion detection the check the *Enable Video Motion* box. With motion detection enabled, the camera constantly and automatically compares one frame with the previous frame to determine if there were any significant changes. If so then the camera declares a motion event and sends a

picture to RavenShoeSecurity.com and optionally records a video clip to the built in micro SD.

You can check both methods of motion detection of you like, but when setting up the video motion it is often easier when the PIR is turned off during the setup process.

For video motion detection you can further tune the camera by drawing a mask and setting the sensitivity level. The *Clear* button will completely erase the mask so you can start over again. The *Refresh Image* button will fetch the latest image from the camera and use it as the back-drop. Use this button if you have moved the camera since bringing up the Motion Detection page so that your mask is accurate.

If you use a video motion mask that blocks out some of the image you should have the camera fastened down. If the camera is accidentally moved then the mask will no longer be correct.

Click on the *Draw motion area* radio button. Then click and drag within the image to fill in the areas of interest with a red cross-hatch pattern where you want to camera to look for motion. Click on the *Erase motion area* radio button to change the mode such that clicking and dragging will erase cross-hatched areas.

Note that in theory it is possible to draw any shape of mask but it has been observed problems with irregular shaped masks. When this problem manifests the camera constantly fires images when nothing is happening. Changing the mask has no effect. Only a hard reset of the camera will clear this condition. So our advice is to use simple rectangular shapes like the one shown above.

The higher the *Sensitivity* the smaller the amount of motion required to set off an event. The *Sensitivity* setting has no effect on the PIR. 65% is a good starting point for *Sensitivity*.

Click *Save Settings*.

Do a happy dance in front of the camera. Refresh your RavenShoeSecurity.com home page to see the images.

## Step 7: Enabling WiFi

There are two ways to setup WiFi. One is called WPS (Wireless Protected Setup) that is quite simple, however it does not work with all routers. But it is worth a shot.

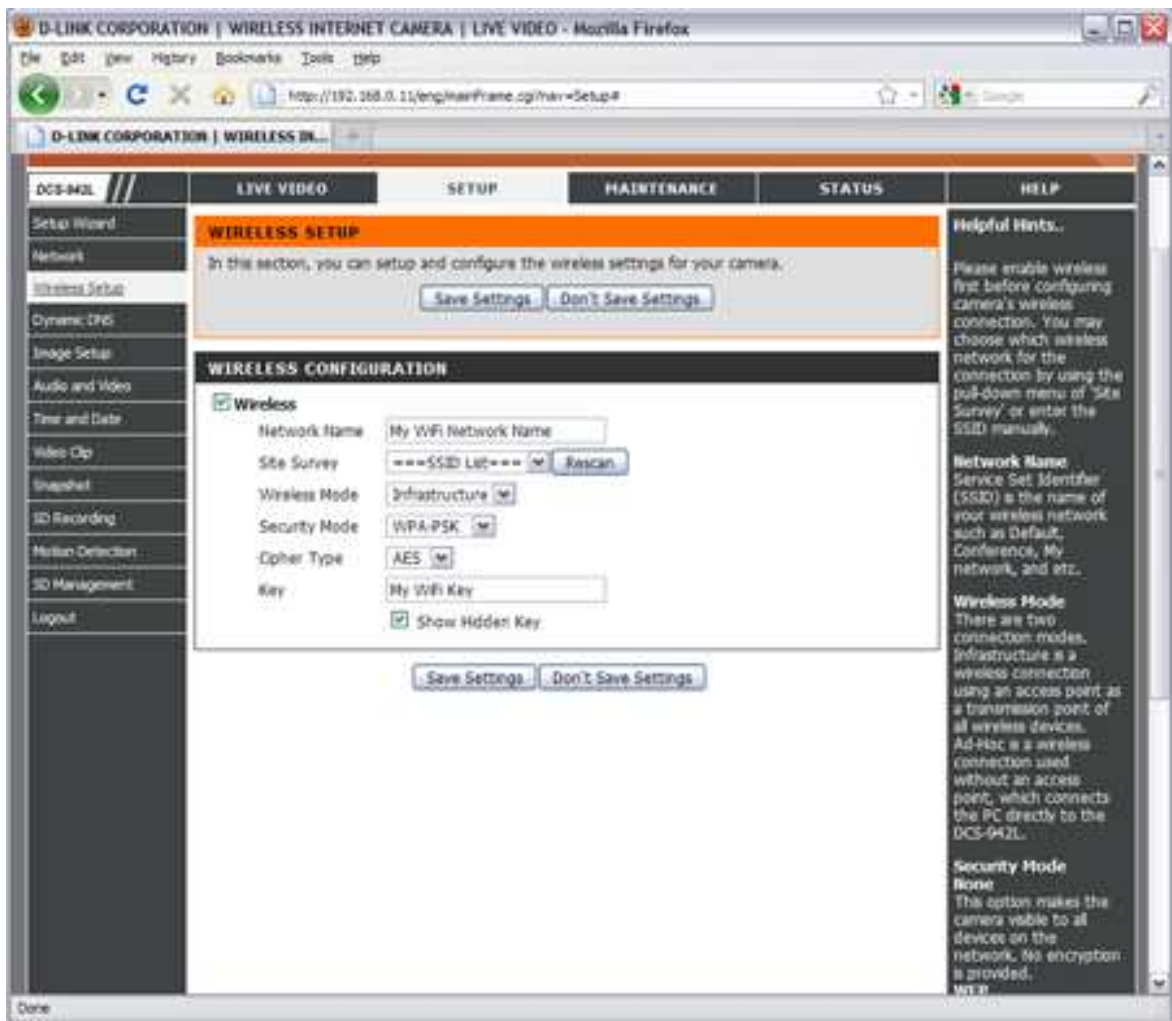
To use WPS press and hold the WPS button on the back of the DCS-942L camera until the blue light starts flashing (about 7 seconds). Then immediately press the WPS button on the router. With some routers it seems to be better to repeatedly press the WPS button until the blue light on the camera stops flashing. With other routers it is best to just hold the WPS button down until the blue light stops flashing. In any case, when the blue light stops flashing the green light on the front of the camera should come on within a minute. If so then bonus – your camera has been tuned into your WiFi network using WPS.

If you believe WPS has been successful then remove the camera's power and disconnect the RJ45 cable. Power the camera up. The light on the front should first be red and then within a minute it should turn green – indicating that camera setup is complete!

If WPS does not work right away then, in our experience, it is better to just abandon this approach and use manual method. This will be easier than trying to debug WPS.



Click the *Wireless Setup* menu under *Setup*.



Check the *Wireless* box.

You can click on the *Site Survey* list box to see what WiFi networks your camera can “see”. Use the *Rescan* button to refresh this list. Selecting one of the networks displayed in the list box causes it to get transferred to the *Network Name* box. The *Network Name* may also be referred to as the SSID (Service Set Identifier). You can also type or paste into the *Network Name* box.

The *Wireless Mode* should be **Infrastructure**. Generally the camera automatically detects the *Security Mode* and *Cipher Type*.

The *Key* is the WEP/WPA/WPA2 key for your WiFi network. Remember that upper and lower case letters are significant on WiFi keys.

Click *Save Settings*.

Unplug the camera's power and disconnect the Ethernet cable. Re-power the camera. The red light on the back should light up and then within a minute the light should turn green indicating the camera is on-line.

Do your happy dance in front of the camera and refresh your RavenShoeSecurity.com home page to see the images.

## Step 8: Optional SD Recording

One of the great features of the DCS-942L is that it has a built in micro SD drive that can (at the time of this writing) handle up to an 8GB device. The camera can store 5,000+ video clips that average 1.5MB in length.

Fitted with a micro SD, the DCS-942L becomes a combo camera/DVR in a very tiny package. Adding a RavenShoeSecurity.com recording plan provides for effortless automatic offsite backup of motion activated real time images which can be viewed and shared over the Internet. As well, should there be an Internet outage the camera can continue recording on it's internal SD.

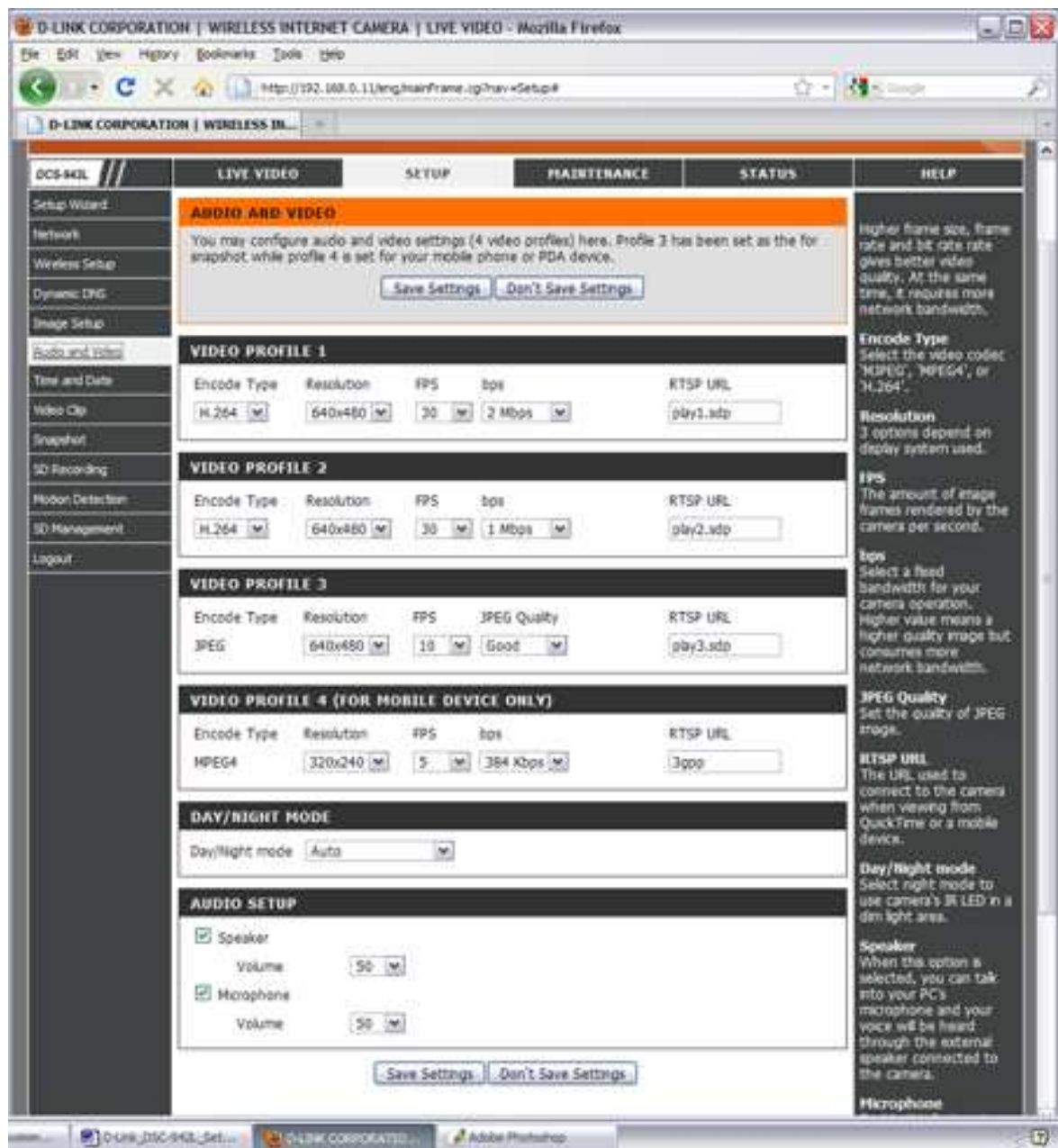
You can view the recordings through the internal website (as described below) or you can pop the micro SD, put the chip in a larger SD adapter and then put that combo into a PC, laptop, or Mac and play the files using media player software. If your computer does not accept SD media, SD readers that plug into a USB port are readily available at most computer stores for a modest cost.

It is a good practice to use two micro SDs. When popping one out to view a PC or Mac, pop in the other one so the camera can continue to record. Keep in mind that when ever you install a micro SD chip that the camera needs to be power cycled.

Apple Quicktime and VLC are great media players that can be downloaded for free at these sites:

Apple Quicktime	<a href="http://www.apple.com/quicktime/download/">http://www.apple.com/quicktime/download/</a>
VLC Media Player	<a href="http://www.videolan.org/vlc/">http://www.videolan.org/vlc/</a>

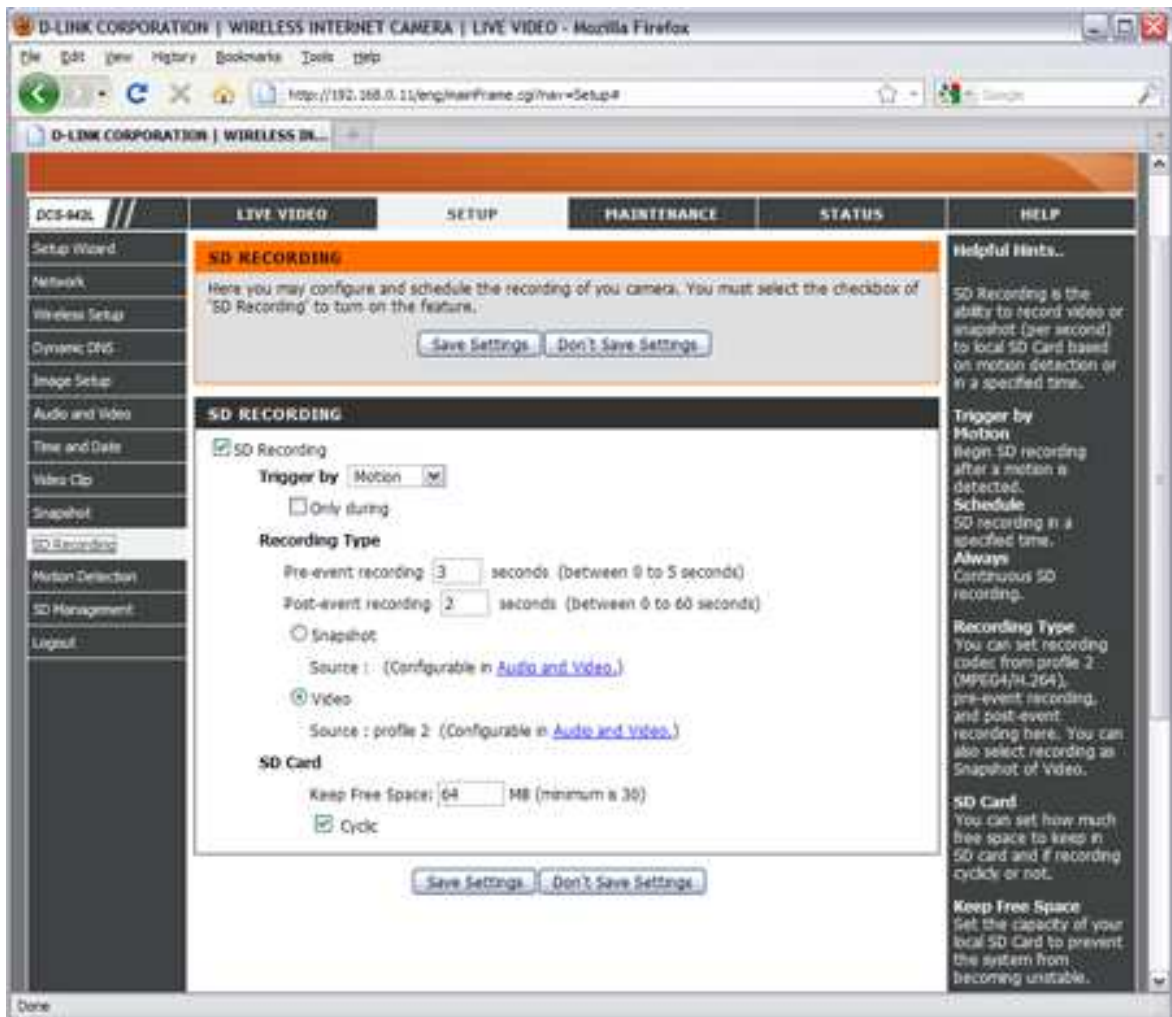
To setup the built-in DVR first click on the *Audio and Video* menu to see this page:



Under *Video Profile 2* set the *Encoding Type* to **H.264**, *Resolution* to **640x480**, *FPS* to **30bps**, and *bps* to **1Mbps**.

Click on *Save Settings*.

Click on the *SD Recording* Menu to see the following page:



Check the *SD Recording* box. Set *Trigger By* to **Motion**. Uncheck the *Only during* box.

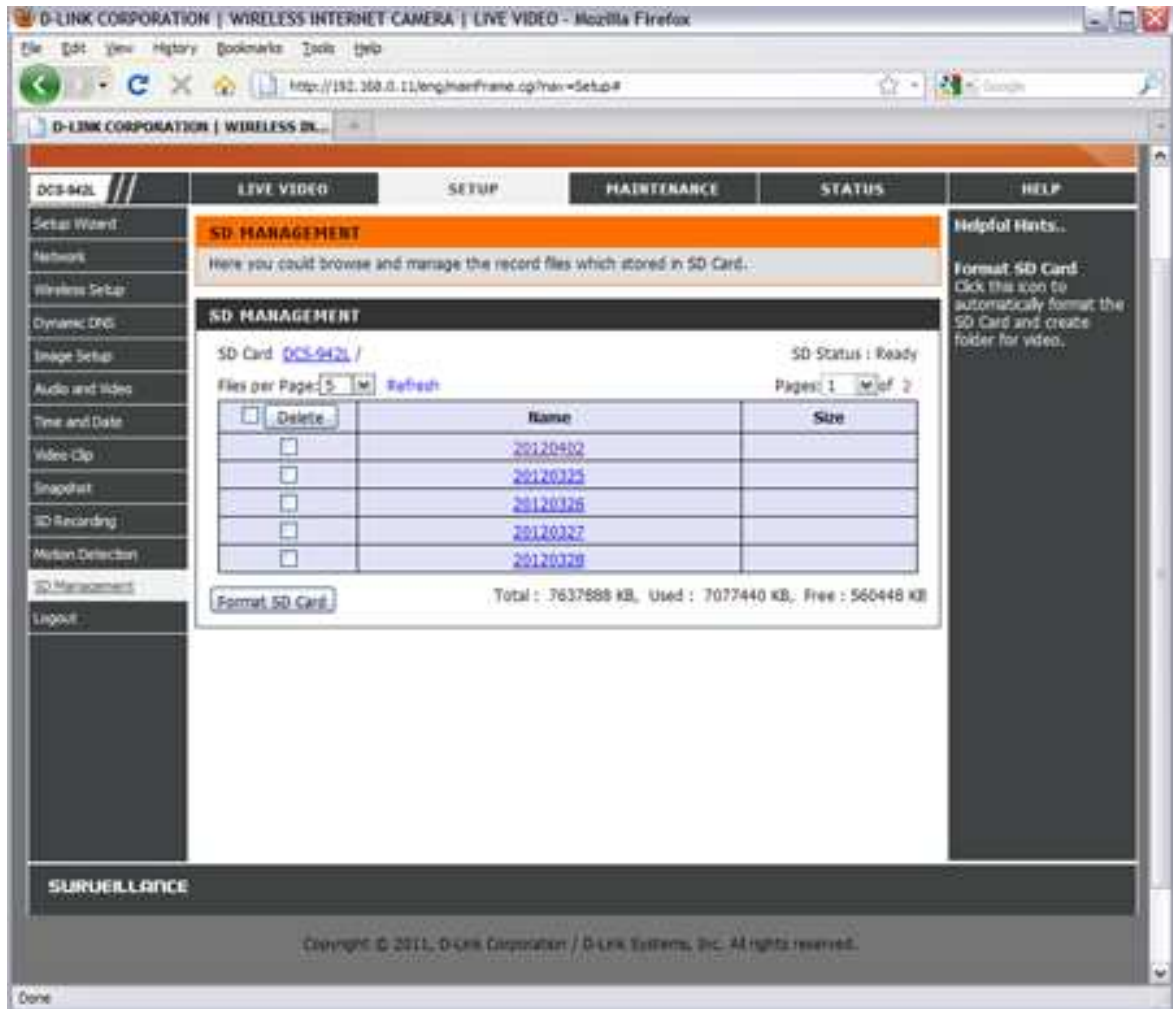
The example shows a *Pre-event recording* value of **3** seconds (with a possible range of 0 to 5) and a *Post-event recording* value of **2** seconds (with a possible range of 0 to 60). Feel free to adjust these to best suit the situation.

Click on the *Video* radio button. Set the *Keep Free Space* to **64**. Checking the *Cyclic* box.

Click the *Save Settings* button.

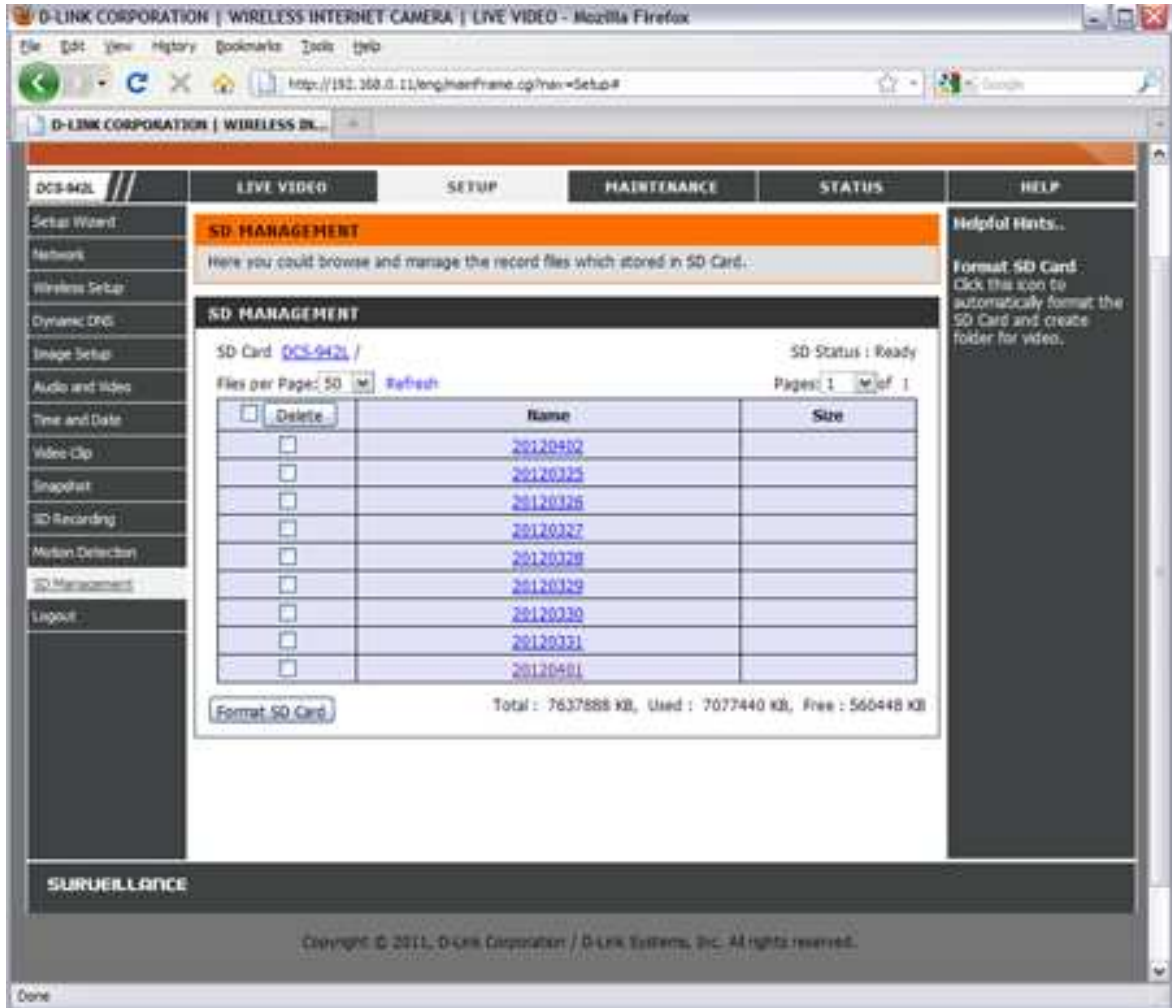
# Retrieving Video Clips

To retrieve video clips click on the *SD Management* menu to see this page:



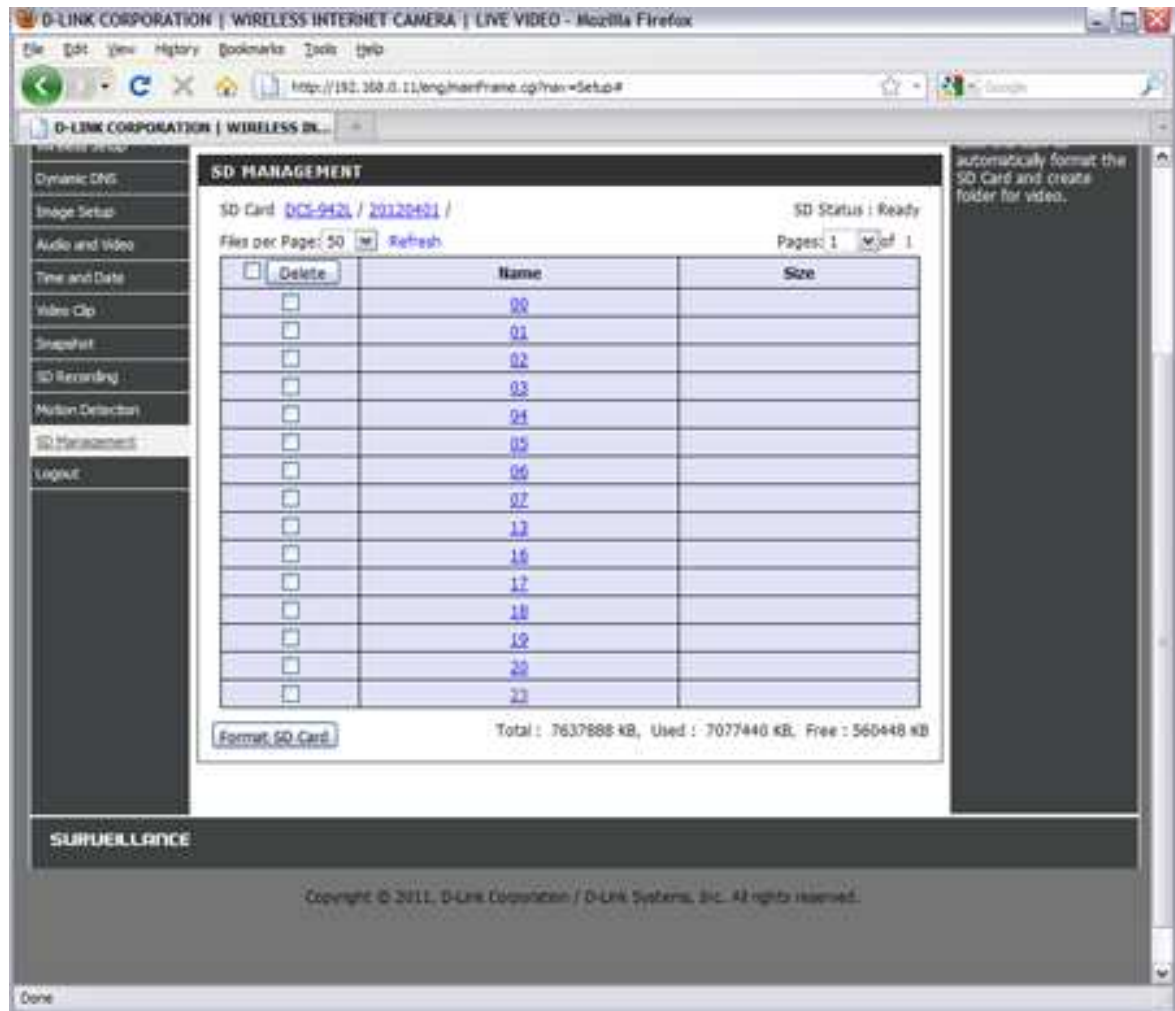


Note that the *Files Per Page* value starts as 5. This may hide some recordings.  
When *Files Per Page* is set to 50 the following is displayed:



Note that only the dates that have one or more recordings are displayed.

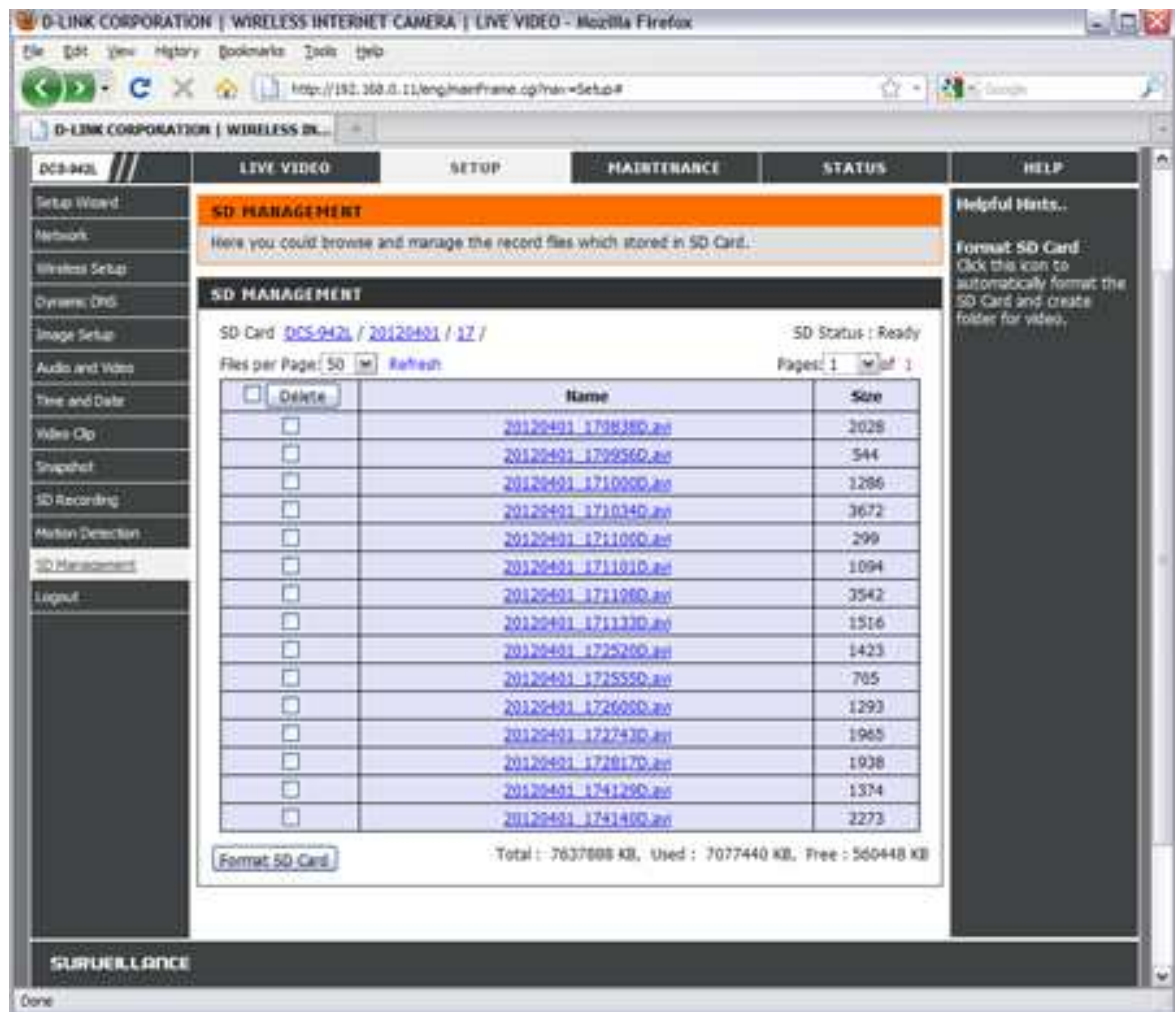
Click on the date of interest and an hourly break down is presented:



Note that only the hours for which there are recordings are displayed.



Click on an hour of interest and all the video clips for that hour are listed:



The date and time are encoded in each file name:

yyyymmdd\_hhmmssD.avi

The size (in KB) shows the relative length of each clip.

If you click the *Format SD Card* button and then click *OK* all the files will be erased. It is recommended that all new micro SD chips be formatted as means of testing.

## Battery Backup

To further enhance the security offered by the DCS-942L consider adding a UPS (Uninterruptible Power Supply) to the mix. These devices condition the electrical supply, suppress surges, and provide power for a brief period of time should there be an interruption. Typically a desktop computer and monitor use about 150 watts and a UPS will power them for 10 minutes or so. As most power outages are short these small UPS devices provide coverage most of the time and give the computer user time to cleanly shut down.

Compared to a desktop computer system, the DCS-942L uses under 5 watts of power. This greatly extends the time that a small UPS can provide power. In tests that we have performed, a UPS rated at 425VA will power the camera for over 3 hours. The UPS cost \$50.

In more remote areas where power may not be fully reliable (such as at a cottage) adding a UPS will give you full camera/DVR coverage through power and Internet outage. If thieves cut the power to your building the DCS-942L with a 425VA UPS can record motion activated video+sound to it's micro SD for 3 hours or more.

# Glossary

DVR – Digital Video Recorder

GB – GigaByte (1,000,000,000 bytes)

IP – Internet Protocol

IR – Infrared

ISP – Internet Service Provider

KB – KiloByte (1,000 bytes)

LAN – Local Area Network isolated from the Internet by a router/firewall

MB – MegaByte (1,000,000 bytes)

RJ45 – Physical Ethernet connector

SSID – Service Set Identifier (name of your WiFi network)

UPS - Uninterruptible Power Supply

URL – Universal Resource Locator (e.g. website name)

VA – Volt Amps

WAN – Wide Area Network aka: the Internet

WEP/WPA/WPA2 – Encryption methods used for WiFi.

WiFi – Wireless IP protocol used in homes and businesses

WPS – Wireless Protected Setup